During the 1980s, ethnic groups living in the mountainous areas of Northwest Vietnam were discouraged from practicing shifting cultivation and their livelihood systems shifted to more settled farming systems which revolve around annual crop cultivation. As their farming systems primarily occur on sloping land covering 75% total area, this transformation has resulted in very high levels of soil erosion and recent declines in productivity. Integrating agroforestry systems into these degraded landscapes has the potential to address this degradation process and improve local livelihoods. Moreover, those ethnic minorities have unique social and cultural norms. Agricultural intervention in this region requires understanding the real needs and interests grounded in socio-cultural contexts. This study applied local-knowledge-based methodologies with sixty indigenous farmers from six villages of Kinh, Thai and H’mong people across 3 provinces to understand local opportunities, preferences and constraints for adopting agroforestry systems. Our results showed that whilst farmers from all groups were aware of benefits of using trees in soil conservation, they had different perceptions on the benefits of agroforestry systems, which was likely to influence their types of agroforestry system adopted. All groups stated that it was important that the agroforestry systems had some provisioning function relating to income generation but had differing needs in relation to regulating functions. The H’mong people were interested in increased land, labor and fertilizer utilization, the Thai people highlighted soil erosion reduction and the Kinh people were motivated by soil fertility improvement. This study suggests that farmer’s specific social circumstances influence their aspiration and constraints for agroforestry intervention. Perceived challenges to adopting agroforestry systems varied among those ethnic groups. The findings have shown that agricultural activities are highly gendered, in which men and women play specific roles and have particular constraints and interests. H’mong men have both formal and informal learning channels, while women trust informal information from their female peers, indicating that current agricultural extension services are not reaching women. Therefore, gender-responsive agricultural extension services and interventions are highly recommended. Policies supporting agroforestry need to be tailored for different groups in order to build resilient livelihoods and ensure future environment benefits.